

Abstract Submitted  
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**Structure of KEEN Waves in Phase Space: Partitions, Coherence, Spectrum**<sup>1</sup> BEDROS AFEYAN, VLAD SAVCHENKO, KIRK WON, Polymath Research Inc., TUDOR JOHNSTON, INRS-Energie, Quebec, CA — We will show just where in the ponderomotive driver,  $w$ - $k$  plane, KEEN waves [1] can be excited and sustained after the drive is turned off. For  $k\lambda_D$  values of 0.1-0.6 and  $w/wp$  values of 0.1-1.6, we will examine the morphological differences in sustained KEEN waves based on the stiffness of the background plasma and the self-organization properties of these highly nonlinear coherent structures using Vlasov-Poisson simulations. The partitions of phase space into a series of concentric oscillating traps where on average many more particles are trapped than untrapped will be explained [2]. The extent to which these are entirely different objects than the stationary BGK modes often sought in nonlinear systems will be explained. The impact these waves can have in the evolution of nonlinear electron plasma waves will also be given.

[1] B. Afeyan, et al., Proc. Inertial Fusion Sciences and Applications, 213, eds. B. Hammel, D. Meyerhofer, J. Meyer-ter-Vehn and H. Azechi, Amer. Nucl. Soc. 2004  
[2] B. Afeyan, V. Savchenko, K. Won, T.W. Johnston “New Long-Lived Nonstationary Coherent Structures in Vlasov Plasmas: KEEN Waves,” submitted to Physical Review Letters, 2006.

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